Give Design a Chance: A Case for a Human Centered Approach to Operational Art

A Monograph

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How does the US Army negotiate the challenge of arranging tactical actions in complex environments against hybrid threats to achieve strategic objectives? To address this question and confront assumptions and current methods of thinking, there is a need for a holistic and human centered approach in strategy development and operational art. This demands fuller integration of the Army Design Methodology (ADM) and the Military Decision Making Process (MDMP). This monograph proposes a way of thinking and planning that goes beyond current Army doctrinal methodologies to address the changing character of warfare. A review of human centered design provides a theoretical foundation for this cognitive method followed by an examination of the relationship between strategy, tactics, and operational art. A discussion of uncertainty and complexity theory supports the argument for greater inclusion of conceptual planning and a human centered approach. A review of the ADM identifies areas within conceptual planning that are useful in the MDMP, which indicates conceptual and detailed planning is complementary and overlapping. Recommendations emerge for full integration of the ADM and the MDMP to avoid marginalization of conceptual planning and the inclusion of a self framing step to the ADM. This acknowledges the synergistic relationship between conceptual and detailed planning.

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Abstract

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How does the US Army negotiate the challenge of arranging tactical actions in complex environments against hybrid threats to achieve strategic objectives? To address this question and confront assumptions and current methods of thinking, there is a need for a holistic and human centered approach in strategy development and operational art. This demands fuller integration of the Army Design Methodology (ADM) and the Military Decision Making Process (MDMP). This monograph proposes a way of thinking and planning that goes beyond current Army doctrinal methodologies to address the changing character of warfare. A review of human centered design provides a theoretical foundation for this cognitive method followed by an examination of the relationship between strategy, tactics, and operational art. A discussion of uncertainty and complexity theory supports the argument for greater inclusion of conceptual planning and a human centered approach. A review of the ADM identifies areas within conceptual planning that are useful in the MDMP, which indicates conceptual and detailed planning is complementary and overlapping. Recommendations emerge for full integration of the ADM and the MDMP to avoid marginalization of conceptual planning and the inclusion of a self framing step to the ADM. This acknowledges the synergistic relationship between conceptual and detailed planning.

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Acronyms

ADM   Army Design Methodology

ADP   Army Doctrine Publication

ADRP   Army Doctrine Reference Publication

CSA   Chief of Staff of the Army

IDF   Israeli Defense Force

IPB   Intelligence Preparation of the Battlefield

MDMP   Military Decision Making Process

TRADOC Training and Doctrine Command

Illustrations

Introduction

Machines don't fight wars. Terrain doesn't fight wars. Humans fight wars. You must get into the mind of humans. That's where the battles are won.

—Colonel John Boyd

The characteristics of modern warfare demand campaigning forces have the ability to perform the cognitive functions of designers. When the hardest part of the problem is identifying and describing the problem, engineering functions alone are inadequate and design is essential.

—TRADOC Pam 525-5-500

The relationship between the past and present offers a theoretical lens for thinking about the future of war and warfare. The continuities of the past and contingencies of the present exist in a perpetual series of encounters and intersecting moves.[1] As argued by historian John Gaddis in his seminal work, *The Landscape of History*, "continuities intersect contingencies, contingencies encounter continuities, and through this process history is made" along with a construct for thinking about the future.[2] This concept of understanding the relationship between the past, present, and future offers a way for thinking about the historic element of the enduring nature of war, and present and future notions of the character of warfare.

These timeless concepts, as described by the 19th century military theorist Carl von Clausewitz, remain relevant today and are likely to remain unchanged in the future. Imposing one's political will with violence on an opponent remains fundamental to the of nature war. The Prussian philosopher captured the role of conflict as an instrument of human effort in his statement that "war is nothing but the continuation of policy with other means."[3] While there is continuity in how societies perceive war, the character of warfare is changing. General Mark Milley, the 39th Chief of Staff of the US Army, adamantly stated that ground war is "on the cusp of fundamental change,"

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[1] John Lewis Gaddis, *The Landscape of History* (Oxford: Oxford University Press, 2002), 31.

[2] Ibid.

[3] Carl von Clausewitz, *On War*, edited and translated by Peter Paret and Michael Howard (Princeton: Princeton University Press, 1976), 69.

regarding how, where, and with what weapons and tactics nations and groups fight.[4] The veteran

commander advocated a revolution in how the Army fights based on his understanding of the

confluence of near-peer adversaries, nation states, non-state actors, insurgents, and terrorist

organizations. This convergence of networked actors will employ a lethal hybrid approach of

conventional warfare, terrorism, and guerilla tactics in urban centers to defeat capability

asymmetries: these represent the contingencies of the present. With this, the Army Chief asserted,

"Significant change in our current methods of thinking, training and fighting" is required.[5] Milley

called for introspection and redesign of Army processes to address his assessment that the character

of warfare has changed.

Similar to the general's view, French philosopher/architect Paul Virilio posited that urban

environments are the battlefield of the modern era, trumping traditional geopolitics and geostrategy.

Concentrations of people in cities drive the "fusion between hyper-terrorist civil war and

international war, to the point that they're indistinguishable."[6] Given this reality of urbanization and

a trend towards hybrid, asymmetric warfare, there is an emerging imperative to transform Army

planning processes to account for these contingencies in the character of warfare. This goes beyond

linear, engineer functions with analytical planning methodologies that currently define the Military

Decision Making Process (MDMP) and strives for a fuller, richer appreciation of the political and

human dimensions.

The Army Design Methodology (ADM), representing a contextual approach, can address

Milley's insistence for a change in Army thinking and planning. However, current Army planning

doctrine contains a flaw. There is a doctrinal divide between the MDMP and the ADM. This leads

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[4] Rick Maze, "Radical Change Is Coming: Gen. Mark A. Milley Not Talking About Just Tinkering Around The Edges," *Association of the United States Army* (December 13, 2016), accessed December 14, 2016, https://www.ausa.org/articles/radical-change-coming-gen-mark-milley-not-talking-about-just-tinkering-around-edges.

[5] Ibid.

[6] Paul Virilio and Sylvère Lotringer, *Pure War* (New York: Semiotexte, 1983), 10, 13.

to the problem for military planners of recognizing the limit of best planning practices of the MDMP and practically integrating design into the operations process. A lack of design familiarity contributes to a lack of knowledge to operationalize design methodologies and subsequently marginalizes its application in Army planning and operations.

Furthermore, in the MDMP and the ADM, the doctrinal focus predominantly orients on things external to an Army organization or unit such as the adversary and environment. There is little emphasis internally to understand oneself, or how redesigning or rearranging the organization may change the nature of relationships within complex environments against adaptive adversaries. These problems with the current doctrinal approach to planning will continue to hamper the Army's ability to challenge current methods of thinking about operational problems. The Army risks failure to address Milley's insistence that "every assumption we hold, every claim, every assertion, every single one of them must be challenged."[7]

To confront assumptions and current methods of thinking, there is a need for a holistic and human centered approach in strategy development and operational art. This demands fuller integration of conceptual and detailed planning processes resident in the ADM and the MDMP respectively. This approach will help link strategy and tactics to overcome the inadequacies in traditional capabilities-based military strategy and operational art development. The Army should translate this requirement for greater integration of conceptual and detailed planning into doctrinal planning process.

Full integration of the ADM and the MDMP will help address one of the most important questions for the Army given the changing character of warfare. How does the Army arrange tactical actions to strategic ends against hybrid, asymmetric threats in complex environments, given tactical efforts are so difficult to translate to strategic success? A good starting point is the application of critical and creative thought inherent in design thinking that is human centric and

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[7] Maze, "Radical Change Is Coming."

holistic in nature and goes beyond analytical, linear, and reductionist planning techniques in Intelligence Preparation of the Battlefield (IPB) and MDMP.

Historically, the Army struggles to prepare for and fight the next war because the last war serves as its point of reference. This occurs often without appreciating Gaddis's concepts of continuities and contingencies that shape present and future understanding. Military organizations have a tendency to use historical templates to orient strategy and tactics to fight the next war. That template may include familiar environments and conventional enemy forces that fight a certain way or perhaps violent extremist organizations with identified patterns of action.

This tendency to fight the last paradigm neglects what is different between that and the enemy in context—and thinking about and striving to understand what truly is different with the current enemy. There is a tendency to fight toward an end state derived from a preexisting template, rather than fighting a strategy based on political and human dimensions within the current environment and with the adversary. Organizational behavior theorist James March echoed this habit "for frames to persist over a sequence of situations. Familiar frames hold a privileged position, in part because they are more or less automatically evoked in a subsequent situation."[8]

Gal Hirsch, an Israeli Defense Force (IDF) brigadier general, noted that "identifying changes, understanding them, and developing methods, capabilities, and mission forces to face them—these are preconditions to becoming a relevant organization."[9]

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[8] James G. March and Chip Heath, *A Primer on Decision Making: How Decisions Happen* (New York: Free Press, 1994), 15.

[9] Gal Hirsch and Reuven Ben-Shalom, *Defensive Shield* (Jerusalem: Gefen Publisher, 2016), 131.

He goes on to describe the modern operational environment confronting the Israeli Defense Forces, which more broadly characterizes the complexity and character of war confronting the US military:

> A frantic reality has become a part of our lives. We confront daily uncertainties, which we must interpret and assess in order to come up with solutions. Most of the time, we react to the threat, but the challenge is to be able to create a relevant operational response, in a relevant time frame. We then must immediately go on to identify the next threat. In an era of speedy and frequent changes, this challenge is becoming more difficult.[10]

There is a need to make sense of complex environments, adversaries, and even oneself in light of the inherent uncertainties of warfare that such diverse thinkers as Milley, Virilio, and Hirsch described. Human centered design answers this call for comprehending the political and human dimensions and according to German communications theorist Klaus Krippendorff, it is the phenomenon "that humans do not see and act on the physical qualities of things, but [act] on what they mean to them."[11] Design offers a human centered approach in strategy development and operational art and strives to understand context and meaning in asymmetric, hybrid conflict. This type of approach is cognitive before it is physical and leads to understanding oneself, the environment, and the enemy's mindset to develop hybrid strategies and tactical actions that move faster than the opponent.

Practitioners of this approach disagree with generalizing about adversaries or labeling the enemy in such a way that conveys it is not worth understanding. It goes beyond doctrinal best practices in the MDMP that trend towards linear and reductionist methodologies such as mission analysis or IPB. These doctrinal methodologies cause commanders and staffs to break things apart for analysis as organizations work through finding feasible, acceptable, and suitable approaches to problems. A reductionist planning approach tends to look for answers assuming the problem. A holistic and human centered approach using design questions what the problem is first and is more

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[10] Gal Hirsch and Reuven Ben-Shalom, *Defensive Shield* (Jerusalem: Gefen Publisher, 2016), 131.

[11] Klaus Krippendorff, *The Semantic Turn: A New Foundation for Design* (Boca Raton: CRC Press, 2006), 47.

likely to result in tactical actions in alignment with higher policies and strategies. Design is about synthesis of information to gain a better understand of the whole.

The purpose of this monograph is to propose a way of thinking and planning that goes beyond current Army doctrinal methodologies to address the increasing importance of human centric approaches given present day contingencies that amount to changes in the character of warfare. It assumes a theoretical view of future conflict as urban, hybrid with an adaptive adversary, and often asymmetrical within complex operational environments. One of the most important issues the Army must address in future warfare is producing operational art, or the arrangement of tactical actions to meet strategic ends, that is relevant in relation to hybrid, asymmetric threats. This is critical because even in conventional warfare, translating tactical effort to strategic success is immensely challenging due to uncertainty and complexity that permanently resides in the political and human dimension.

The catalyst for this topic of human centeredness and a necessity for design emerged in the highly complex operational environment in Iraq during the summer of 2003 following the collapse of the Iraqi regime. From 2003 forward in Iraq, often questionable US military tactical action and ambiguous strategy employed over a decade and a half of protracted conflict produced at times more lingering issues than favorable outcomes. There are multiple reasons for this that are beyond the scope of this paper, nevertheless, there appeared to be a decoupling of tactics and strategy. This resulted in occasional meaningless tactical action that seemed counterproductive to the often unclear strategic aims. This monograph is an attempt to discover theoretical alternatives to the cognitive processes that led to unsatisfying and inadequate strategy and tactical action in Iraq. The objective is to discover a better way of thinking and doing in the application of operational art in complex environments.

Organization

This monograph began with an introduction describing the continuity of the nature of war juxtaposed to the contingencies of the changing character of warfare. It argues for greater doctrinal integration of conceptual and detailed planning. A human centric, design approach for sense making, offers clarity for understanding complex environments, adversaries, and oneself given the significance of the political and human dimensions. A brief review of human centered design theory directly follows to provide a foundation for this cognitive method. Subsequently, in the first section, the focus shifts to exploring the challenges with unifying strategy and tactics, followed by the origins and emergence of US Army operational art that suggests inadequacies and opportunities to bridge the strategic-tactical divide. Section two examines uncertainty and complexity theory and section three reviews Army planning methodologies to illustrate inadequacies and opportunities to achieve a holistic and human centered way of thinking.

The conclusion posits that design thinking in the ADM, and detailed planning in the MDMP, must reach full integration in doctrine to avoid marginalization in practice. Perhaps more importantly, this integration should alter the way Army leaders think and plan going beyond the current bifurcation of planning methodology in doctrine. This will arrive at a synergistic approach that considers the political and human dimensions through a human centered outlook. A recommendation emerges that any design process must include and perhaps begin with a design or reframe of self. This recommendation, along with the merging of conceptual and detailed planning processes signal important steps toward changing the way commanders and staffs at all levels think and plan. This provides intellectual methods that address Milley's call for significant change in the way leaders think to challenge assumptions, claims, and assertions about the adversary and the Army's response.

Human Centered Design Theory

Human centeredness is the acknowledgement that humans respond not to material properties of the physical world such as "form, structure and function," but to their individual and cultural meanings."[12] This emphasis on meaning is a cognitive approach that allows for accuracy in understanding a human environment, an adversary with a unique perspective, and even oneself relative to the former two things. To understand the source of meaning, Krippendorf posited that language is what permits humans to "construct and reconstruct the realities they see. In the use of language…acting and perceiving are inseparably tied to a constructive understanding." To understand, one must conceptualize, and this comes only through language. The words we use, spoken or written, convey a sense of reality to oneself and others regarding the world.[13]

Sociologists Peter Berger and Thomas Luckmann discussed the phenomenon of language affecting meaning over time: "Language is capable of becoming the objective repository of vast accumulations of meaning and experience, which it can then preserve in time and transmit to following generations."[14] Language is the medium that permits transferring of experiences, values, morals, culture among other artifacts to create categories that possess meaning for oneself and others. Berger and Luckmann as well as Krippendorff agree on this point, while the former authors clarified that language "bridges different zones within the reality of everyday life and integrates them into a meaningful whole."[15] Meaning thus surfaces with language and as people interact with other cultural artifacts within their lives.

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[12] Klaus Krippendorff, *The Semantic Turn: A New Foundation for Design* (Boca Raton: CRC Press, 2006), xii.

[13] Ibid., 20-21.

[14] Peter L. Berger and Thomas Luckmann, *The Social Construction of Reality* (Garden City, NY: Doubleday, 1966), 37.

[15] Ibid., 39.

This is a dynamic process, continually occurring, reoccurring, and increasing as human experiences unfold. It must shape the military practitioners thinking to find meaning and understanding of an operational environment.[16]

Humans talk and write about themselves to achieve self awareness.[17] Language and communication makes this knowledge of self possible. Berger and Luckmann suggested that language provides a "reference to everyday life [and] refers above all to the reality…[people experience] and share with others in a taken-for-granted manner."[18] A final thought on language and meaning follows that underscores the necessity to consider all environments and adversaries on their own merits. Krippendorff confirmed that "meanings are always someone's construction [through language], just as sense is always someone's sense, and hence, meanings are always embodied in their beholder."[19] The cultural artifact of language must be first in priority to understand what is of value to people, what shapes human thought and experience, and which approach may yield productive results that bridge strategy and tactics in a military context. This is the essence of human centeredness. If a military practitioner understands the meaning of language and artifacts within a culture, insights to the political and human dimension of that society follow.

Human centeredness has implicit and explicit connotations of messiness and uncertainty given meaning starts at the individual level where free will and consciousness reside. In light of this unsettled state, design offers a mechanism for inquiry to "understand things, to make them meaningful, to feel at home with them, and to make them part of one's life."[20] Krippendorff expanded on this by stating design allows "people to realize who they are to themselves and in view

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[16] Krippendorff, *The Semantic Turn*, 56

[17] Ibid., 38.

[18] Ibid.

[19] Ibid., 56.

[20] Ibid., 73.

of others."[21] Designing one's self to find "desirable futures" is a good start for people intent on using design to go beyond interpretation to change themselves and their environment.[22]

Architect Harold Nelson and theorist Erik Stolterman took an equally pragmatic tone but stressed, with quality leadership, design is "the most effective and efficient means of getting organizations and individuals to new places."[23] This aspect of design emphasizes first designing or reframing one's self to achieve a desired outcome or future. There is a clear message here for military teams to seize opportunities to redesign the organizational structure before looking outward to alter the environment obtained a desired outcome.

Hirsch, who commanded the Israel Defense Force's 91st Division in the 2006 Lebanon war against Hezbollah, redesigned and restructured his conventional army organization to address their hybrid, asymmetric adversary. He declared, "A force can be deployed using endless variations of functionality, profiles, and signatures, all tailored to the context and need."[24] The Israeli commander reinforced an important lesson in self design that opportunities may emerge through organizational restructuring that otherwise would be unrealized. This firmly addresses Milley's view of a fundamental change in ground war that necessitates a revolutionary shift in how, where, and with what weapons and tactics the Army fights. A methodology that considers self design speaks to Milley's vision.

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[21] Krippendorff, *The Semantic Turn*, 73.

[22] Ibid., 21, 29.

[23] Harold G. Nelson and Erik Stolterman, *The Design Way: Intentional Change in an Unpredictable World* (Cambridge, MA: The MIT Press, 2012), 5.

[24] Hirsch, *Defensive Shield*, 131.

Architect Bryan Lawson enhanced Krippendorff's description by characterizing design as a "sophisticated mental process capable of manipulating many kinds of information, blending them all into a coherent set of ideas and finally generating some realization of those ideas."[25] Nelson and Stolterman spoke of design as a form of human imagination. The wheel, an early example of imagination, was a human design, not discovery. This specific design was emblematic that "design is the ability to imagine that-which-does-not-exist, to make it appear in concrete form as a new, purposeful addition to the real world."[26] Design integrates thought and action, a form of wisdom that manifests through the design process. [27] This method Nelson and Stolterman advocated allows military organizations to design novel operational approaches, in complex environments against adaptive adversaries, to produce desirable outcomes.

Design thinking, in the manner Krippendorff, Lawson, and Nelson and Stolterman have described, is a holistic and human centered approach in pursuit of meaning and understanding within the political and human dimensions. Achieving this within any situation, environment, or with an adversary allows the military practitioner to give agency to the enemy, thereby achieving accuracy in assessment. Simply put, design is a human process that demands holistic and clear thinking to achieve rich understanding, and it wisely shapes a desired future outcome in an operational environment.

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[25] Bryan Lawson, *How Designers Think: The Design Process Demystified.* 4th ed. (Amsterdam: Architectural Press, 2006), 14.

[26] Nelson and Stolterman, *The Design* Way, 12.

[27] Ibid., 11.

Section 1: Strategy, Tactics and US Army Operational Art Foundations

> Any war should first of all be treated with respect to its possible character and its general features as based on political relations and categories. Politics is the only thing entitled to a superior position for governing the general direction of a war.
>
> Tactics teaches the use of armed forces in the engagement; strategy, the use of engagements for the object of the war.
>
> —Carl von Clausewitz, *On War*

The issue of unifying military strategy and tactical action is not a new challenge of the 21st century, but the changing character of warfare given the new contingencies of this century requires an evaluation of this relationship to ensure intellectual clarity and relevant military action going forward. The operational artist, to arrive at relevant, meaningful, and timely tactical action, must balance operational effectiveness and tactical efficiency with the efficacy of strategy.[28]

This tension between strategy and tactics is what Chinese expert Francois Jullien explores with the relationship between efficiency, proficiency, and efficacy. The operational artist can best bridge this tension by using a holistic and human centered approach to develop operational art using design methods. This method considers the political and human dimension of warfare. This matters because this type of a holistic approach to produce operational art offers the potential for a harmonious relationship between strategy and tactics. This decreases the possibility for harmful and untimely military tactical actions and operations that can lead to unnecessary damage, loss of life, and strategic failure.

In an effort to examine the relationship between strategy, tactics, and the role of operational art, this section will begin by exploring the purpose of strategy before tracing the foundations of US

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[28] *Merriam-Webster's Online* defines efficiency, effectiveness, and efficacy as follows: something that is efficient is "able to do something or produce something without wasting materials, time, or energy." Something that is effective is "adequate to accomplish a purpose [or] produce the intended result." Something that has efficacy possesses the "the power to produce a desired result or effect," accessed March 15, 2017, https://www.merriam-webster.com/dictionary.

Army operational art. This will begin by reviewing the theoretical contributions from Clausewitz and British officer and theorist T.E. Lawrence and move next to the Soviet operational theory of deep battle of annihilation before concluding with the intellectual framework military theorist John Boyd provided in this realm. Finally, an examination of the Chinese tradition of efficacy and strategy development offers an alternate perspective to the western traditions of bridging the divide between strategy and tactical action.

Military Strategy as a Framework Providing Logic and Purpose to Tactical Action

Clausewitz stated that a winning strategy in war owes victory to tactical success, but a strategy's "ends, in the final analysis, are those objects which will lead directly to peace."[29] Given this logic, the purpose of war is to "attain a better condition of peace."[30] Clausewitz's 19th century commentary on strategy, tactics, and warfare should resonate with modern day theorists and military practitioners. Twentieth century theorist T.E. Lawrence expanded on the relationship by considering that "the whole house of war in its structural aspect, which was strategy, [and] in its arrangement, which were tactics" is the responsibility of the commander to bring together.[31] Similar to Lawrence's efforts to sort through the tension between strategy and tactical action, the military practitioner must produce relevant operational approaches that nest with strategic ends in the pursuit of political objectives and ultimately peace. In this endeavor, Clausewitz's notion of politics governing the direction of war and Lawrence's idea that strategy is structure for tactics are an

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[29] Clausewitz, *On War*, 143.

[30] Everett Carl Dolman, *Pure Strategy: Power and Principle in the Space and Information Age* (NewYork: Routledge, 2005), 15.

[31] T.E. Lawrence, *Seven Pillars of Wisdom* (Hertfordshire, England: Wordsworth Editions Limited, 1997), 181.

important theoretical basis to guide further discussion on the relationship between politics, strategy and tactics, and the role of operational art.

Nesting or unifying strategy and tactical action is historically a tremendous challenge. This difficulty creates a sense of urgency to understand the efficacy that can characterize military strategy. This efficacy of strategy implies it has the power to produce an intended result but strategy can also "rely on the potential inherent in the situation" which goes beyond material or capability considerations to achieve a desired result.[32] T.E. Lawrence explored this notion of potential in strategy during World War I while leading a materially inferior Arab force against the Turkish army: "There were many humiliating material limits, but no moral impossibilities; so that the scope of our diathetical activities was unbounded."[33] The British officer spoke of the psychological aspect of strategy that overcame material limitations as "an influence, an idea, a thing intangible, invulnerable, without front or back, drifting about like a gas."[34] The characteristics of potential and psychology of military strategy provides a way for military practitioners to proceed in an effort to bridge strategy and tactical action through a holistic approach that goes beyond material considerations to the human dimension.[35]

Military strategy functions by implicitly providing logic and purpose as well as the organizing principles for tactical action to achieve this grand purpose of war Clausewitz spoke of over two hundred years ago. In this way, strategy is similar to a skeleton or framework from which

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[32] Francois Jullien, *A Treaties on Efficacy Between Western and Chinese Thinking.* Translated by Janet Lloyd (Honolulu: University of Hawaii Press, 2004), 16.

[33] Lawrence, *Seven Pillars of Wisdom,* 185.

[34] Ibid., 182

[35] The term military practitioner and operational artist are used inter-changeably in this context. The military practitioner is responsible for developing operational art that serves as the connective tissue between military strategy and tactical action.

tactical action eventually takes form. Dutch military officer and theorist Frans P.B. Osinga identified a moral aspect to strategy given the stakes are so high in war: "Strategy is the essential ingredient for making war either politically effective or morally tenable. Without strategy, there is no rationale for how force will achieve purposes worth the price in blood and treasure. Without strategy, power is a loose cannon and war is mindless."[36] Strategy holds a critical position for the logic and purpose it provides.

The difficulty in unifying strategy and tactics is an enduring challenge. However, the nature of this relationship is a topic of fundamental importance moving forward. At the nexus between strategy and tactics is operational art. Operational art serves as the theoretical and doctrinal means to unify tactical action with strategy.

Foundations of US Army Operational Art: Clausewitz's Contributions

The Army defines operational art as "the pursuit of strategic objectives, in whole or in part, through the arrangement of tactical actions in time, space, and purpose."[37] The first part of this definition is heavily influenced by Clausewitz and expressly links the policy maker's strategy with the military practitioner's tactics to achieve strategic or political objectives. The latter part of the definition, the arrangement of tactical actions in time, space, and purpose, borrows heavily from Soviet theorists of the 1920s through 1930s interwar years who developed the theoretical concept of deep battle of annihilation, the Soviet conceptual version of operational art. Given these origins of Army operational art, a closer examination of Clausewitz's contribution precedes a review of the theoretical underpinnings of Soviet deep battle of annihilation.

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[36] Frans P.B. Osinga, *Science, Strategy, and War: The Strategic Theory of John Boyd* (New York: Routledge Talyor & Francis Group: 2007), 10.

[37] Army Doctrine Publication (ADP) 3-0, *Unified Land Operations* (Washington, DC: Government Printing Office, 2011), 9.

The Army's definition of operational art emphasizes the commander's role in the tactical realm to gain positions of advantage, while employing these tactical actions to reach strategic objectives.[38] Explicit in this definition of operational art is the essential relationship between strategic objectives and tactical actions. This is a central facet of the definition. According to Clausewitz, the political aim that drives strategy "must adapt itself to its chosen means [tactical action]…yet the political aim remains the 'first consideration.'"[39] The political aim and resulting strategy must maintain control to keep tactical actions from taking on a "life of their own and change initial [political and strategic] objectives."[40] Firm political aim and strategy is a prerequisite to ensure tactical action or the military grammar does not "overwhelm political [and strategic] logic."[41] Therefore, it is important to acknowledge that tactical actions do not make a strategy.

There is no single source that informed the US Army's theoretical basis of operational art. Nevertheless, Clausewitz needs to receive much of the credit linking the policy maker's strategy and tactics when he wrote, "War is nothing but the continuation of policy with other means."[42] Politics and war are inseparable, yet the challenge for the military practitioner is the flexible

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[38] ADP 3-0 *Unified Land Operations*, 10; operational art is described further in ADP 3-0, "operational art is how commanders balance risk and opportunity to create and maintain the conditions necessary to seize, retain, and exploit the initiative and gain a position of relative advantage while linking tactical actions to reach a strategic objective. It requires commanders who understand their operational environment, the strategic objectives, and the capabilities of all elements of their force. These commanders continually seek to expand and refine their understanding and are not bound by preconceived notions of solutions."

[39] Clausewitz, *On War*, 87.

[40] Richard K. Betts, "Is Strategy an Illusion?," *International Security* 25, no. 2 (Fall, 2000): 50, accessed November 28, 2016, http://www.jstor.org/stable/2626752.

[41] Ibid.

[42] Clausewitz, *On War*, 69.

arrangement and employment of tactics that account for changing conditions, including changing strategic objectives.[43]

Clausewitz posited that war was a form of expression or grammar between people, but not separate from politics, when he wrote, "Is war not just another expression of… speech or writing? Its grammar, indeed, may be its own, but not its logic."[44] The Army's operational art in its current doctrinal form appears to account for Clausewitz's theory of war as a unique grammar. This grammar only exists in the logic of a military strategy that emerges from political objectives and is by its nature, a dynamic human process.

Another challenge for the military practitioner is the recognition that singular tactical actions may have little or no value until viewed in the final strategic balance as demonstrated in the United States' wars in Vietnam and later in Iraq from 2003-2011.[45] Military theorist Everett Dolman expands upon this tension involving tactical action and political strategy and the necessity for operational lucidity:

> Tactical victory, according to Clausewitz, is the military means by which policy is enacted. Stringing together tactical victories is a plan of operations or campaign, and so it is at the operational level that the logic of war begins to intrude on the political objective. By maintaining a pure clarity of operational purpose, to control or contest the appropriate medium (which is not the same as the political or overall military aim), the operational strategist tangibly links the political intent to the military means.[46]

As defined in Army doctrine, commanders' role in operational art is to "expand and refine their understanding" of strategic objectives and readily adapt solutions.[47] The definition of

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[43] Justin Kelly and Mike Brennan, "Alien: How Operational Art Devoured Strategy," *Strategic Studies Institute Monograph* (September 2009): 8, accessed December 10, 2016, http://www.strategicstudiesinstitute.army.mil/pdffiles/pub939.pdf.

[44] Clausewitz, *On War*, 605.

[45] Emile Simpson, *War from the Ground Up: Twenty-first-century Combat as Politics* (New York: Cambridge University Press: 2012) 30.

[46] Dolman, *Pure Strategy*, 30.

[47] ADP 3-0, *Unified Land Operations,* 10.

operational art appears to hold up to Clausewitz's theory of war with reinforcement from Dolman, but American war experiences that decoupled strategy and tactics contributed to this contemporary definition of operational art.

Material and capability considerations that link ends, ways, and means in traditional military strategy development have a role. However, this type of approach disregards the dynamism inherent in the political process that determines political objectives and political strategy. A balanced approach to military strategy is required that includes material considerations as well as innately human variables within an environment. A holistic and human centered approach using design to gain situational understanding of an environment is more likely to produce a military strategy that provides meaningful logic or framework. With this logic for action, the operational artist has the elements to develop an appropriate and, when necessary, varying grammars in war that find adaptive solutions against adversaries waging asymmetrical and hybrid war.

To this end, staff execution of the MDMP is often inadequate due to the mechanical nature of the process focused on solving a problem, versus a design method, which holistically considers an environment to identify the correct problem first, before considering the operational approach. Additionally, a design process offers the mechanism to achieve shared understanding as well as creative, unique, and adaptive approaches that are not bound to preconceived notions of solutions. This type of a conceptual approach accounts for the Army's contemporary doctrinal construct of operational art.

Foundations of US Army Operational Art: The Soviets and Deep Battle Theory of Annihilation

According to the Army Doctrinal Publication 3-0, *Unified Land Operations*, the theoretical foundation for the arrangement of "multiple, tactical actions in time, space, and purpose to achieve" strategic objectives is another significant aspect of US Army operational art.[48] This theory of

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[48] ADP 3-0, *Unified Land Operations*, 9.

warfare was born in the 1920s by Soviet theorists. These Soviet military leaders and theorists

sought a change in the conduct of war based on lessons learned from World War I and the Russian-

Polish War to account for conceptual troubles in large-scale European warfare.[49] The Soviets

sought to translate strategy into tactical action through an operational approach. This change in

warfare, as seen by the influential Soviet theorists including Generals Mikhail Tukhachevskii and

Georgii Samoilovich Isserson, was necessary given larger 20th century armies distributed over

great expanses of terrain, in contrast to smaller armies focused on narrow fronts that characterized

much of 19th century warfare.[50] In addition, there was a need to counter defensively postured

armies.[51] These Soviet theorists provided the conceptual reference for the military idea of deep

battle of annihilation. This new way of warfare called for the sequencing of actions in time and

depth within enemy areas.[52] Tukhachevskii and Isserson adapted theories to develop an operational

perspective in which simultaneous actions along with momentum achieved "a new grand multi-

level battle waged on several tiers within the operational depths" to destroy enemy forces rendering

opposing armies ineffectual.[53]

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[49] Azar Gat, *A History of Military Thought* (New York: Oxford University Press: 2001), 634.

[50] James J. Schneider, "Vulcan's Anvil: The American Civil War and the Foundation of the Operational Art," *Theoretical Paper* no. 4 (Fort Leavenworth, KS: US Army Command and General Staff College: 2004): 20; Georgii Samoilovich Isserson, *The Evolution of Operational Art,* translated by Bruce W. Menning (Fort Leavenworth, KS: Combat Studies Institute Press, 2013), 7.

[51] Kelly and Brennan, "Alien: How Operational Art Devoured Strategy," 91.

[52] Shimon Naveh, *In Pursuit of Military Excellence: The Evolution of Operational Theory* (London: Frank Cass Publishers: 1997), 33.

[53] Isserson, *The Evolution of Operational Art,* 69.
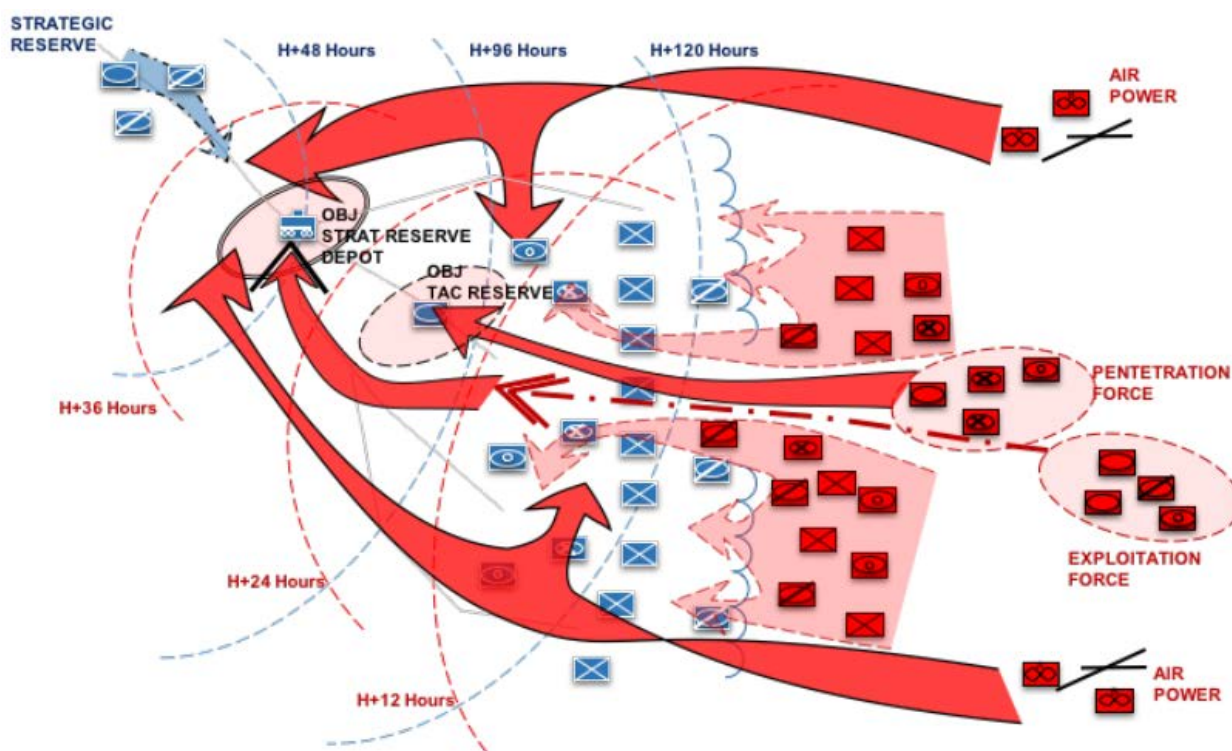
The Soviet Deep Battle Theory (1938)

Figure 1. Deep Battle. *Source*: Richard W. Harrison, *Architect of Soviet Victory in World War II* (Jefferson, NC: McFarland & Company, 2010), 114.

The Soviet's balanced groups of combined arms units of armor and mechanized formations working in cooperation with infantry to exploit weakness and attack in depth to destroy the enemy.[54] This involved synchronization, "meaning the dynamic or rather creative conduct of the maneuvering system in the context of accomplishing its operational objectives and attaining its strategic end."[55] Alternatively, the effect caused by this "operational shock" intended to "neutral[ize] the rival system's…operational ability to attain the aim or objectives assigned to it by the strategic authority."[56] (See Figure 1).

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[54] Gat, *A History of Military Thought,* 637-638.

[55] Naveh, *In Pursuit of Military Excellence,* 234.

[56] Ibid., xviii.

General Tukhachevskii describes this conceptual framework of deep battle that linked strategy and

tactics through combined arms warfare to destroy the enemy:

> One cannot afford to have a plan which does not link the [strategic] beginning and
> [tactical] end. And to link the beginning and end one must visualize the sequence of
> disruption [porazheniia] of the enemy's combat dispositions – in other words one must
> combine the front and the power of the combined arms strike [obschevoiskovogo udara]
> with the successive movement by bounds and the breakout into the area whose seizure
> signifies the defeat of the enemy. Synergetic command and control must then ensure
> synchronization between the forces involved at all stages of fighting.[57]

The deep battle of annihilation concept, which the Soviets applied through operational art,

required the arrangement of tactical actions in time, space, and purpose and within the parameters

of Soviet strategic objectives. In a tactical context, this achieved efficiency of manpower, resources

and time. In the strategic context, the Soviet application of operational art via deep battle ensured

"the appropriate allocation of resources and force building intended to reduce friction and assure

smoothness of operation in the course of attaining the planned goals."[58]

In short, the Soviet deep battle theory employed task organized, combined arms formations

to achieve a breakthrough in "maneuver of destruction that penetrates into the enemy's depth"

before counteraction.[59] This allowed the attacking unit to maintain tempo, momentum, and

cohesion as a fighting system while destroying the cohesion of their adversary. Strategic and

operational unity was a prerequisite along with operational creativity and "planned

improvisation."[60] This "conceptual revolution" shifted away the positional "battle of annihilation"

of the previous century to a new paradigm of "operational strike maneuver" to address the problems

of stalemate experienced in World War I by attacking "the rival system's rationale" through

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[57] M.N. Tukhachevskii, "Novye voprosy voiny," no. 2 (1962): 74 quoted in Naveh, *In Pursuit of Military Excellence,* 234-235.

[58] Naveh, *In Pursuit of Military Excellence,* 235.

[59] Isserson, *The Evolution of Operational Art, 65, 108.*

[60] Naveh, *In Pursuit of Military Excellence,* 236.

destruction of the opponents fielded force.[61] Deep battle theory of annihilation represented an

intellectual shift that occupied the nexus between strategy and tactics and systems thinking in

warfare and contributed greatly to the existence of modern day operational art and the efforts to

unify strategy and tactical action.[62]

Foundations of US Army Operational Art: The Emergence of Air-Land Battle

The Army concept of Air-Land Battle, emerging within Army doctrine in 1982, borrowed

heavily from the Soviet's deep battle theory. Four years later in 1986, the term operational art

entered the Army doctrinal lexicon.[63] This paradigm shift in Army doctrine resulted from the

United States' failures in Vietnam to translate tactical success into the political and military

strategic objectives for the war.[64]

In 1991, the Army applied its version of operational art in the form of Air-Land Battle as a

member of the coalition that successfully expelled Iraqi forces from Kuwait in Operation Desert

Storm.[65] The designers of Army operational theory relied heavily on deep battle theory of

annihilation but departed from the Soviet example by tying operational theory to a level of war and

organizational structure.[66] Furthermore, this new doctrinal construct was by its nature limited to one

grammar of war, that of linear and conventional battle. With a focus on the "concentration of

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[61] Naveh, *In Pursuit of Military Excellence*, xviii, 165.

[62] Ibid., 165.

[63] Kelly and Brennan, "Alien: How Operational Art Devoured Strategy," 92-93.

[64] Harry G. Summers, *On Strategy: A Critical Analysis of the Vietnam War* (New York: Presidio Press, 1995), 1.

[65] John S. Brown, "The Maturation of Operational Art Operations Desert Shield and Desert Storm," *Historical Perspectives of the Operational Art* (May 2005): 473, accessed August 9, 2016, http://www.history.army.mil/html/books/070/70-89-1/cmhPub_70-89.pdf.

[66] Antulio J. Echevarria, "American Operational Art, 1917-2008," In *The Evolution of Operational Art: From Napoleon to the Present*, edited by John Andreas Olsen and Martin van Creveld (New York: Oxford University Press: 2011), 155; Naveh, *In Pursuit of Military Excellence,* 259, 272.

superior firepower to win" against conventional land armies with superior numbers, the Army's operational theory of Air-Land Battle proved inadequate for emerging security challenges of the 21st century.[67]

Insurgencies in Iraq and Afghanistan exposed these flaws following ground invasions in 2001 and 2003 respectively. The linear operational approach maximizing capability and material solutions including firepower overmatch to achieve strategic objectives, and the hierarchical restrictions placed on operational art exposed the inadequacies of this method. Adversaries expended great effort to overcome massive technological and capability asymmetry the United States possessed.

Moving forward to the present, advantageously, there is no longer a hierarchical or organizational structure restriction placed on operational art and operational theory within Army doctrine. This intellectual shift acknowledges operational art exists at all levels and hierarchies of command. The search for solutions following immense challenges in Vietnam ushered operational theory and art into doctrine. Current military practitioners are the beneficiaries of this intellectual advancement that provides the structure to link military strategy to tactical action in pursuit of political objectives.

Insights on Strategy and Tactics from John Boyd: Learn, Adapt, Evolve

John Boyd, a US Air Force fighter pilot from the Korean War era turned military theorist made considerable contributions to the American brand of operational art that continues to influence military and policy makers in the realm of strategy and tactics. His ideas on the "conduct of war…[not only] inspired AirLand Battle…doctrine" but offered essential insights for "understanding the threats of the post-9/11 world."[68] A central, overarching theme emerged from

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[67] J.C Studt "Forward" in W.S. Lind, *Maneuver Warfare Handbook* (New York: Westview Press, 1985), xi. Quoted in Naveh, *In Pursuit of Military Excellence,* 256.

[68] Osinga, *Science, Strategy, and War*, 256.

Boyd's work, which resonates today given the changing character of warfare. Successful strategy and tactics, along with the connective tissue of operational art, requires "the capability to evolve, to adapt, to learn, and deny such capability to the enemy."[69]

In Boyd's presentation, "Patterns of Conflict," he articulated the theoretical goal and strategic aim for successful operations: "diminish [the] adversary's freedom-of-action while improving our freedom-of-action, so that our adversary cannot cope—while we can cope—with events/efforts as they unfold."[70] This goal applies to strategy, operational art, and tactical action and Boyd insisted that the conceptual frameworks in these realms remain "open to change on the basis of new information from external world and avoid at all cost closing on themselves" by viewing new information through a preexisting and inflexible framework.[71]
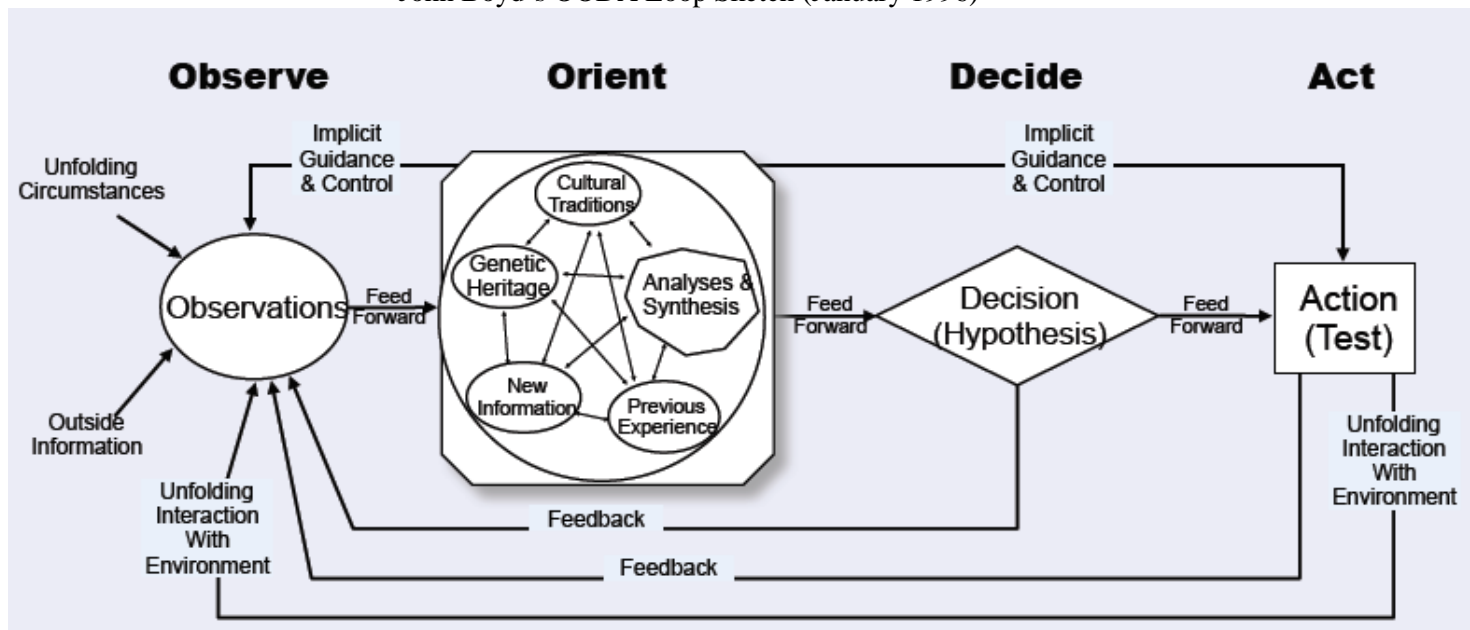
John Boyd's OODA Loop Sketch (January 1996)

Figure 2. OODA Loop. *Source*: John R. Boyd, "The Essence of Winning and Losing," ed. Chet Richards and Chuck Spinney. January 2012, accessed December 15, 2016, 3.

[69] Osinga, *Science, Strategy, and War*, 237; Boyd commonly used the term grand tactics in lieu of the term operational art. The terms are interchangeable for the purposes of this monograph.

[70] John R. Boyd, "Patterns of Conflict" (briefing, January 2007), 128, accessed December 15, 2016, http://www.dnipogo.org/boyd/patterns_ppt.pdf.

[71] Bousquet, T*he Scientific Way of Warfare*, 193.

Boyd believed in the complexity inherent in life and military operations given the innate humanness of the world. This human dimension causes uncertainty and Boyd insisted strategic thought in this context "requires a continuous combination of analysis and synthesis, induction and deduction, destruction and creation, and a multidisciplinary and multi-spectral approach."[72] These requirements for handling military problems called for a holistic approach that centered on the importance of thoroughly orientating one's self to any given situation.

One of Boyd's characteristics of successful strategy and tactics, mentioned previously, is the necessity to evolve, adapt, and learn while denying the enemy's ability to do so. The key idea of adapting is one of the foundational aspects of his theory implicitly captured in his mnemonic, the OODA loop (observe, orient, decide, act). (See Figure 2) This is perhaps the most well known output of Boyd's theoretical work, but the OODA loop is only a descriptive tool for understanding the breadth and depth of his theories in the strategic, operational, and tactical realms.

In "Patterns of Conflict," Boyd discussed the tactical need to "observe-orient-decide-act more inconspicuously, more quickly, and with more irregularity as basis to keep or gain initiative as well as shape and shift main effort: to repeatedly and unexpectedly penetrate vulnerabilities and weaknesses exposed by that effort or other effort(s) that tie-up, divert, or drain-away adversary attention (and strength) elsewhere."[73] Similarly, regarding grand tactics or operational art, Boyd offered that one must "operate inside [an] adversary's observation-orientation-decision-action loops, or get inside his mind-time-space, to create tangles of threatening and/or non-threatening events/efforts as well as repeatedly generate mismatches between those events/efforts [an] adversary observes, or imagines, and those he must react to, to survive."[74]

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[72] Osinga, *Science, Strategy, and War*, 234.

[73] Boyd, "Patterns of Conflict," 128.

[74] Ibid., 141.

Boyd's OODA loop is a tremendous breakthrough and contribution to operational art for its explanatory role regarding strategic and tactical encounters.[75] Boyd mentioned the need to conduct the OODA loop faster than the adversary; however, this is a cautionary tale that risks irrelevant, unnecessary, or even harmful tactical action if "observation was inaccurate because of…inadequate orientation."[76] Ultimately, the orientation is the most important step in the OODA loop because if done holistically, one can achieve accuracy and thoroughness of understanding of an adversary and environment.

In Boyd's model, observation comes prior to orientation. When one applies the OODA loop to ground combat, complete observation of the enemy is problematic. The adversary may use deception and otherwise expend great effort to conceal and hide his location. Boyd advocated cycling through his OODA loop through pulses of action, which effectively rearranges the environment and provides more opportunities to observe an adversary, orient more completely, prior to deciding on action. A holistic approach to the orientation step, which Boyd insisted on, informs one's interaction within an operational environment to develop meaningful strategy and operational art that provides clarity and logic for tactical action.

In summary, Boyd viewed the military strategic aim and operational maneuver as a series of actions directed "by the logic of making the rival system [or adversary] irrelevant in the context of its own aim."[77] Boyd's concept and principles of maneuver relative to an adversary including "initiative, agility, depth and synchronization," provided the theoretical framework that informed Air-Land Battle.[78] More importantly, his notion of achieving adaptability through the OODA loop, a holistic and human centered approach to understand an environment and adversary before acting,

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[75] Osinga, *Science, Strategy, and War*, 241.

[76] Ibid., 236.

[77] Boyd, "Patterns of Conflict," 128; Naveh, *In Pursuit of Military Excellence,* 258.

[78] Naveh, *In Pursuit of Military Excellence,* 258.

provided a theoretical framework for the strategist to formulate sound strategy and the operational artist to create logic for meaningful tactical action.[79]

Boyd's strategic theory and insistence for adaptability assumed the presence of complex adaptive systems "struggling to survive in a contested, dynamic, non-linear world pregnant with uncertainty."[80] For Boyd, this diverse holistic approach "became an argument in itself…[and] a prerequisite for sound strategic thinking…[as well as] an understanding of the dynamics of war and strategy."[81] In short, Boyd's theoretical framework offered a great deal of insight for approaching any adversarial, complex, and fluid situation that will benefit from a harmonious relationship between strategy and action that moves through the OODA loop faster than an opponent. This lends to adaptability but it is possible only through a holistic approach to observe surroundings and orient one's self in a complex environment prior to action.

Chinese Efficacy: Strategic and Tactical Harmony through Situational Understanding

The Chinese tradition of efficacy as it relates to military affairs draws a sharp distinction to Western notions of efficacy and practice of strategy development. The eastern version of efficacy offers an alternate perspective, an opportunity for thinking that focuses on potential and propensity inherent in any situation. This is fundamentally a holistic approach similar to Boyd's insistence to orient oneself fully before action and in the same vein as human centeredness—all three diverging from the Western focus on material solutions and technological capabilities. A consequence of thinking in terms of efficacy and holistically viewing a situation is greater harmony between strategy and tactical action.

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[79] Naveh, *In Pursuit of Military Excellence,* 258.

[80] Osinga, *Science, Strategy, and War*, 241.

[81] Ibid.

Efficacy is the "the power to produce a desired result or effect" and is at the center of the Chinese notions of strategy as investigated by Francois Jullien in *Treaties on Efficacy between Western and Chinese Thinking*.[82] The contrast between Chinese and Western traditions is demonstrated in how each society understands humanity's ability to predict and control the world.

In the Western tradition, the Greek philosophical notions of "ideal forms [are] set up as models to be projected onto the world and that our will deliberately establishes [the ideal forms] as a goal to be attained. This is the tradition of a plan devised in advance and the heroism of action."[83] Implicit in this Western arrangement handed down from Greek philosophers is the connection between ends and means.

The "ideal forms" Jullien pointed out refer to the end, aim, or objective or in Western military parlance, a desired end state. With the end(s) as a stated goal, the logical next step in the Western tradition is the paring of means to accomplish the end. Inherently this material approach is an extension of Newtonian laws, which provided explanations and predictions of the natural world with the belief that control is achievable.[84]

Contrary to the Western view of ideal forms, intended results, and control is the Chinese belief of efficacy that emphasizes detecting favorable conditions and factors within a given context or situation. This requires one to "rely on the potential inherent in the situation" which goes beyond material or capability considerations.[85] Chinese efficacy "teaches one to learn how to allow an effect to come about: not to aim for it (directly) but to implicate it (as a consequence), in other words, not to seek it, but simply to welcome it—to allow it to result."[86] In this regard, Jullien

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[82] *Merriam-Webster's Online,* accessed March 15, 2017, https://www.merriam-webster.com/dictionary.

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[83] Jullien, *A Treaties on Efficacy*, vii, 15.

[84] Ibid., 12.

[85] Ibid., 16.

[86] Ibid., vii.

pointed out that the potential is akin to a mountain stream's "downward sloping course and its narrow channel (which result from the configuration of the mountain landscape)."[87] Potential is inherent in the mountain setting and its stream.

In addition to the inherent potential of the mountain, the water in the stream possesses a propensity defined as "an often intense natural inclination or preference."[88] The water in the mountain stream has a propensity to flow down the slope, much like "stones rolling down" the same mountain.[89] The Chinese view of efficacy that considers potential and propensity among other variables within any given situation is fundamentally holistic and inherent in design. This type of thinking requires careful consideration, patience, and wisdom to move from a focus on material responses within an operational environment and against an adversary and towards novel, unique, and productive response. This answers the Army chief's urging to challenge assumptions and the existing paradigms within Army thinking, planning, and operations process.

This section set out to explore theoretical ideas that are at the heart of the triad of strategy, tactics, and operational art and how a holistic approach and design can overcome the tensions inherent in this relationship. Strategy, as a set of organizing principles, provides the purpose, logic, and focal point for the arrangement of tactical action. Operational art lies at the nexus of strategy and tactics. It is the operational artist's role to select the appropriate grammar of war and arrange tactical actions in time, space, and purpose to achieve strategic objectives.[90]

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[87] Jullien, *A Treaties on Efficacy*, 17; Potential defined by *Merriam-Webster's Online* is "existing in possibility," accessed March 28, 2017, https://www.merriam-webster.com/dictionary.

[88] *Merriam-Webster's Online*, accessed March 28, 2017, https://www.merriam-webster.com/dictionary.
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[89] Jullien, *A Treaties on Efficacy*, 17, 27.

[90] ADP 3-0, *Unified Land Operations*, 9.

Given the complexity of the world and the changing character of warfare, strategy can fail if the selected means are insufficient to achieve the end or if the end is overly ambitious and inappropriate given the means available.[91] Soviet deep battle theory of annihilation and later Air-Land Battle doctrine advanced the US Army's understanding of operational art. This progression arrived at contemporary Army doctrine, which acknowledges the necessity for the appropriate arrangement of tactical actions to achieve strategic objectives, but acknowledges past operational shortcomings due to overreliance on technology and material solutions. Boyd's theoretical contribution along with the notion of Chinese efficacy lends to a holistic and human centered approach using design for understanding an environment and adapting to achieve harmony between strategy and action. This is vital for strategic and operational relevancy against 21st century hybrid, asymmetric adversaries in a world that is highly interconnected and increasingly complex.

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[91] Richard K. Betts, "Is Strategy an Illusion?," *International Security* 25, no. 2 (Fall, 2000): 50, accessed November 28, 2016, http://www.jstor.org/stable/2626752.

Section 2: Uncertainty and Complexity

> War is not a chess game but a vast social phenomenon with an infinitely greater and ever-expanding number of variables, some of which elude analysis.
>
> —David Galula, *Counterinsurgency Warfare: Theory and Practice*

There are few certainties regarding operational problems military organizations may face. War is by its nature an uncertain endeavor. Clausewitz pointed out "in war everything is uncertain, and calculations have to be made with variable quantities."[92] Uncertainty in war is equally true today, as it was during the 19th century, or even the ninth century. However, two significant variables that differentiate the current era and character of warfare from the past are increased urbanization and interconnectedness, both affecting complex environments. The Army's ability to find unique and adaptive solutions in this context is vital and emphasis on human centered design methodologies provides an appropriate framework.

There are various explanations for this phenomenon of interconnectivity but perhaps the foremost account is that modern technology enables rapid diffusion of information worldwide.[93] Global economies, governments, even societies are increasingly more interconnected.[94] This phenomenon exists throughout the world and is especially present in densely populated urban areas where vast access to communications technology including the internet, smart phones, and social media exists.

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[92] Clausewitz, *On War*, 136.

[93] Training and Doctrine Command Pamphlet (TRADOC Pam) 525-3-1, *The US Army Operating Concept: Win in a Complex World, 2020-2040* (Fort Eustis, VA: Training and Doctrine Command, October 2014), 8; Training and Doctrine Command Pamphlet (TRADOC Pam) 525-5-500, *The US Army Commander's Appreciation and Campaign Design* (Fort Monroe, VA: Training and Doctrine Command, January, 2008), 7.

[94] US Department of Defense, *The National Military Strategy of the United States of America, 2015*: *The United States Military's Contribution To National Security* (Washington, DC, June 2015), accessed March 23, 2017, http://www.jcs.mil/Portals/36/Documents/Publications/ 2015_National_ Military_Strategy.pdf; Hirsch, *Defensive Shield*, 135.

The mixing of people, ideas, cultures, and economies fundamentally and unpredictably transforms environments and this is essential to any complexity discussion.[95] Paradoxically, the technological advances that contribute to interconnectedness and complexity are limited in finding solutions to problems in complex environments and may lead to greater unpredictability.[96] Israeli theorist and former Minister of Foreign Affairs, Zvi Lanir, suggested, "The more complex and technologically advanced the organization is, the greater the gaps between its ability to prevent the recurrence of situational surprises and its vulnerability to fundamental surprises." Lanir's terms "situational surprise" and "fundamental surprise" are akin to uncertainty Clausewitz realized many generations prior to the current era of instant information and communications. This supports an argument that uncertainty and complexity are by no means a new phenomenon. Nevertheless, the breadth and speed of human interaction and interconnectivity, in its various forms, is a contributing factor in societal complexity experienced today.

Complexity Theory

At this point, a review of complexity theory can assist going forward to gain an appreciation for the challenges that complex things present. Political scientists Robert Axelrod and Michael Cohen stated, "Complexity does not simply denote 'many moving parts.' Instead, complexity indicates that the system consists of parts which interact in ways that heavily influence the probabilities of later events."[97] The nature of the interactions and the result are important considerations. Political scientist Herbert Simon clarified the issue by theorizing that in complex

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[95] Antonine Bousquet, *The Scientific Way of Warfare*: *Orders and Chaos on the Battlefields of Modernity* (New York: Columbia University Press, 2009), 193.

[96] Nassim Nicholas Taleb, *Antifragile: Things that Gain from Disorder* (New York: Random House, 2014), 7; TRADOC Pam 525-3-1, *The US Army Operating Concept*, 8.

[97] Robert Axelrod and Michael D. Cohen, *Harnessing Complexity: Organizational Implications of a Scientific Frontier* (New York: Basic Books, 2000), 15.

systems, "the whole is more than the sum of the parts" and one cannot infer the properties of the whole simply by looking at the parts.[98]

Given the whole is greater than the sum of its parts, this implies there is something new or novel that did not exist with individual parts prior to interaction. This is something that is unpredictable with an uncertain outcome. The resulting phenomenon of interaction of parts is what Axelrod and Cohen refer to as "emergent properties, which are properties of the system that the separate parts do not have."[99] Steve Johnson, author of the appropriately titled book, *Emergence*, discussed the concept as, "what happens when an interconnected system of relatively simple elements self-organizes to form more intelligent, more adaptive higher-level behavior."[100] Emergence is an aggregation process. People, groups, resources interact and bond together creating an aggregate effect. Repeat this process many times over within an environment and a new form emerges, a new reality based on the multiple iterations and layers of interaction and interconnectivity.

Similarly, Boyd noticed the idea of properties of the system in thinking about complexity. He believed that any system, be that a social system or a living organism, had "an integrated whole whose essential properties arise from the relationships between its parts, and systems thinking, the understanding of a phenomenon within the context of a larger whole" is essential to accurate orientation to any situation or environment.[101] Systems thinking in this context consider how parts relate, interact, and emerge as something beyond individual parts.

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[98] Herbert A. Simon, "The Architecture of Complexity," *Proceedings of the American Philosophical Society*, vol. 106, no. 6 (Dec. 12, 1962: 467-482): 468.

[99] Axelrod and Cohen, *Harnessing Complexity*, 15

[100] Steve Johnson, *Emergence* (New York: Scribner, 2001), 46.

[101] Osinga, *Science, Strategy, and War,* 70.

Breaking things down, reducing the parts of a whole in a complex system does little to gain understanding of the system. Osinga pointed out that "Boyd recommends both analysis and synthesis to comprehend the world, and an opponent's system."[102] A mission analysis and IPB process in the MDMP does not provide the framework for understanding complex systems because a lack of focus on the relationship and "dynamics between components. The study of interactively complex systems must be systemic rather than reductionist, and qualitative rather than quantitative and must use different heuristic approaches rather than analytical problem solving."[103]

Societal interconnectivity—humans interacting with one another in the same locale or across great distances via modern day technologies—has fundamentally altered societal systems and from this something new emerges. This is an important concept for the military practitioner to bear in mind when acting within such an environment. The "human, cultural, and political continuities of armed conflict" within complex environments demand unique approaches.[104]

Failure to Identify Complexity

When concepts such as systems, complexity, and emergence are not understood, policy decisions, strategy, and tactical action are more likely to have unintended effects within an operational environment, and in many cases a lack of understanding may benefit the adversary's cause. The issue interconnectivity and complexity first surfaced for this author on Haifa Street in the central Baghdad neighborhood of Al Karkh during the summer of 2003. Conditions in the city worsened daily.

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[102] Osinga, *Science, Strategy, and War,* 70.

[103] TRADOC Pam 525-5-500, *The US Army Commander's Appreciation and Campaign Design*, 6.

[104] TRADOC Pam 525-3-1, *The US Army Operating Concept*, 8-9.

In this major urban center there was approximately one to four hours of electricity a day, shuttered schools, looted businesses and government buildings, inflated gasoline and propane prices, trash and raw sewage on nearly every corner, along with rising crime. All of this led to extremely high tensions in a city of approximately five million inhabitants.[105]

With the best of intentions to curb crime, but in an act of questionable military necessity, Army leadership in Baghdad enforced a nightly curfew. In one central Baghdad neighborhood on the western bank of the Tigris River, US soldiers broke up nightly 'pick-up' style soccer matches to enforce the curfew. This occurred at the disgust of hundreds of young Iraqis, most of whom were of fighting age. The Army battalion, like others in the city, enforced this curfew regardless of questionable benefits, negative sentiment from the locals, or unintended consequences of forcibly sending Iraqis on their way into the heat of the night.

Nightly confrontations between Iraqi youth and Americans produced unintended consequences. Curfew enforcement fostered ill will towards coalition forces and perhaps the motivation and available time for less productive activities. This perfunctory curfew enforcement failed to account for Iraqi traditions of evening gatherings to avoid the heat of the day and the lack of electricity and air conditioning many Iraqis were accustomed to. The curfew enforcement on midnight soccer games did little to affect problems in Baghdad and arguably contributed to increasing crime in the city.

This simple example of curfew enforcement in a Baghdad neighborhood in 2003 is merely one incident of a failure to understand the interconnectivity and complexity in the operational environment. It was a failure to comprehend systemic effects: the positive produced by these nightly gatherings, and the negative exacerbated by tone-deaf curfew enforcement.

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[105] Andrew Rathmell, "Planning Post-Conflict Reconstruction in Iraq: What Can We Learn?," *International Affairs (Royal Institute of International Affairs 1944-)*, vol. 81, no. 5 (October 2005): 1023, accessed November 21, 2016, http://www.jstor.org/stable/3569073.

Furthermore, this example illustrates the failure to link strategy and tactics, which may have contributed to, and perhaps amplified, the early stages of the insurgency in central Baghdad neighborhoods. Many different types of tactical action in Iraq such as curfew enforcement, clearance operations, nighttime raids against low level insurgents and criminals, or even micro grants to local businesses were often carried out with the best of intentions and in some cases localized benefits. However, there is often a failure to acknowledge and understand the second and third order systemic effects and "chains of consequences" of these decisions and tactical actions.[106] An understanding of complex systems coupled with the wisdom and logic for action that is a product of design methods, may have resulted in different outcomes in Baghdad during the summer of 2003.

Complexity theory provides insight to the nature of complex systems and an understanding of the inherent lack of predictability. The idea of emergence, self-organizing and adaptive parts that form a new reality, should give the military practitioner pause before acting on something complex and unfamiliar. A thorough understanding of the operational environment is necessary in order to act prudently and wisely in complex scenarios. This discussion on uncertainty and complexity makes the case for a human centered design approach that can provide logic to arrive meaningful tactical action.

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[106] Nassim Nicholas Taleb, *Antifragile: Things that Gain from Disorder* (New York: Random House, 2014), 107.

Section 3: ADM and MDMP — Inadequacies and Opportunities

If I were given one hour to save the planet, I would spend 59 minutes defining the problem and one minute resolving it.

—Albert Einstein

The ADM, when integrated with the MDMP, offers a measure of critical and creative thinking to achieve rich understanding of an environment, define problems, and find adaptive operational approaches within complex and dynamic environments. The ADM echoes the spirit of Einstein's famed words on problem solving through the emphasis on the process of understanding context and defining the problem.

Secretary of Defense James Mattis stated, "Design does not replace planning, but planning is incomplete without design."[107] The balance between design and detailed planning will vary "from operation to operation as well as within each operation," and these two processes are "complementary, overlapping, synergistic, and continuous."[108] More than mere problem solving, employment of the ADM as a holistic and human centered approach can "change an existing situation into a preferred one."[109] A closer review of the ADM and opportunities follows but first, this section will discuss the current limitations and inadequacies of the MDMP and the doctrinal arrangement of conceptual and detailed planning.

Conceptual and Detailed Planning Continuum

This monograph acknowledges that current Army doctrine describes a complementary relationship between the ADM and the MDMP on a continuum of planning activities, conceptual to

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[107] General James Mattis, *Memorandum for US Joint Forces Command, Subject: Vision for a Joint Approach to Operational Design* (Norfolk, VA: US Joint Forces Command, 6 October 2009), 7.

[108] Ibid., 7-8.

[109] Krippendorff, *The Semantic Turn*, 26.

detailed, as identified in ADRP 5-0, *The Operations Process*.[110] The familiarity or structure of the

problem, according to ADRP 5-0, is the main criteria for selecting conceptual or detailed planning

processes: "Army leaders employ three methodologies [ADM, MDMP, and the Troop Leading

Procedures] for planning, determining the appropriate mix based on the scope of the problem, their

familiarity with it, the time available, and the availability of the staff."[111]

However, to bifurcate the ADM from the MDMP in practice and doctrine based on problem

familiarity has the consequence of marginalizing design and not promoting critical and creative

thinking before, during, and after planning as well as during the operations process, regardless of

problem familiarity. Arguably, the transition from conceptual to detailed planning is extremely

challenging. One of the consequences of deciding to design or not to design based on problem

familiarity and available time is a lack of design expertise and practical experience implementing

conceptual planning by commanders and staffs when needed the most. Additionally, the complexity

within operational environments necessitates a design process. This facilitates an appreciation for

the totality of the situation and begins to unmask the interconnectivity for a thorough and accurate

orientation. Planners must consider the political and human dimension within operational

environments; attempting to do this with reductionist methods in MDMP risks not seeing

relationships and details that could be revealed otherwise.

Design methodology is often marginalized or forgotten when Army units are confronted

with adversaries or problems in complex environments with little time available for planning. Army

organizations often give design little attention in training or operations in part to commander and

staff lack of familiarity with the design process. There is also an aversion to design methodologies,

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[110] See the discussion on the complementary nature of design to detailed planning in the ADRP 5-0, *The Operations Process*, pages 2-4 and 2-13, and see ATP 5-0.1 *Army Design Methodology*, page 1-3 for a discussion on the relationship between conceptual and detailed planning.

[111] Army Doctrine Reference Publication (ADRP) 5-0, *The Operations Process* (Washington, DC: Government Printing Office, May 2012), 2-13; Army Techniques Publication (ATP) 5-0.1, *Army Design Methodology* (Washington, DC: Government Printing Office, July 2015), v.

which stems from a perception that design is unnecessary and time consuming in most situations. Ultimately, Army planners, especially at the tactical level, fail to employ design when it matters the most, and default to doctrinal models and familiar patterns versus understanding unique situations, context, and meaning. The ADM requires a time commitment, but effort spent up front and during operations to gain and maintain shared understanding of the environment, to define the correct problems, and to determine appropriate operational approaches is not wasted energy.

Limitations of the MDMP

Existing Army planning doctrine provides best practices that tend to be linear or reductionist methodologies such as IPB and the MDMP. These doctrinal methodologies often cause commanders and staffs to break things apart for analysis as organizations work through finding feasible, acceptable, and suitable approaches to problems. Linear and reduction style planning functions found in both the MDMP and IPB predispose planners to look for answers assuming the problem, rather than questioning what the problem is first. These methods alone are inadequate to achieve shared and real understanding of an operational environment or adversary. They can fail to develop productive outcomes given highly complex operational environments where the adversary adapts rapidly to overcome capability asymmetries. Army organizations often "default to doctrinal norms, building plans based upon familiar patterns," instead of finding unique approaches to a specific enemy and environment to contribute to policy and military strategic aims.[112]

There is a significant risk of identifying the wrong problem that addresses symptoms and not its root cause, when linear and reductionist planning methods are used.[113] The linear framework of the MDMP risks closing practitioners off from changes in the environment and "interpreting all

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[112] TRADOC Pam 525-5-500, *The US Army Commander's Appreciation and Campaign Design*, 14-15.

[113] ATP 5-0.1, *Army Design Methodology*, v, 4-4.

new information through the prism of rigid and untouchable schemata."[114] For example, under the mission analysis step of the MDMP, a team typically performs IPB by analyzing friendly and enemy entities. This binary, enemy-friendly model of understanding an environment is limiting when compared to the ADM, which typically frames the environment from multiple perspectives to gain a richer understanding. Relying solely on reductionist methods in the MDMP is not thinking in systems and interconnectivity and may lead to a harmful operational approach within complex environments against adaptive adversaries.

The Army Design Methodology and Opportunities for Human Centered Approach

The first step of the ADM is to frame the operational environment. This is arguably the most important step because everything flows from a holistic understanding of the environment. As discussed, the operational environment is complex and dynamic and determining "the relationship between cause and effect" is not only difficult but often results in uncertainty during military operations.[115] Framing is a means to make sense of a multitude of interconnected and interrelated variables and agents. A design team does this through an empathic method that considers the perspective of others. This is a human centered approach.

A typical starting point for a design group of six to nine people, ideally including the commander, is to work to understand the current state and visualize the "desired future state of an operational environment."[116] Techniques to achieve this include brainstorming, researching, mind mapping, meta-questioning, assumption questioning, and the four-ways of seeing. These methods spur a continuous dialogue and capture the group's critical and creative thinking, which causes the

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[114] Bousquet, *The Scientific Way of Warfare*, 193.

[115] ATP 5-0.1, *Army Design Methodology*, 3-1.

[116] Ibid., 2-5, 3-2.

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environmental frame to evolve as the team debates its findings.[117] This process creates a contextual understanding of the operational environment and informs understanding of problems. To neglect to frame an environment and achieve this rich understanding can lead to misfortunate outcomes.

The attack on Pearl Harbor in 1941 illustrates what political scientist Elliot Cohen and historian John Gooch referred to as aggregate or even a catastrophic failure when either two or three factors occurred in sequence or simultaneously: "failure to learn obvious lessons, failure to anticipate predictable situations, [and] failure to adapt to new and unexpected circumstances."[118] At least the latter two criteria were present at Pearl Harbor given the information available to the military personnel stationed there prior to the attack.

With the luxury of hindsight, these failures help make the case that integrating design into planning on Hawaii in late 1941 may have created dialogue that challenged preconceived notions of the operational environment in the Pacific in mid-to late-1941. One cannot definitively conclude the attack would not have occurred had American leaders employed design thinking. However, in design fashion, the continual reframing of the situation given the vulnerability of Hawaii relative to the continental United States may have provided the needed understanding to take prudent counter measures against any impeding attack. Furthermore, the US Navy and Army may have gleaned a clearer understanding of Japan's intentions in the Pacific had leaders from the Army and Navy conducted combined planning sessions to consider the range of options the Japanese had and countermeasures the Americans possessed.[119] A collaborative design process may have yielded a different outcome. According to Cohen and Gooch, an enhanced understanding of the operational

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[117] Richard M. Swain, "Commander's Business: Learning to Practice Operational Design," *Joint Force Quarterl*y, Issue 53 (2nd Quarter, 2009), 64-65, accessed February 10, 2017, https://www.questia.com/magazine/1G1-195427694/commander-s-business-learning-to-practice-operational; ATP 5-0.1, *Army Design Methodology*, 3-4, 3-6.

[118] Eliot A. Cohen and John Gooch, *Military Misfortunes: The Anatomy of Failure in War* (New York: The Free Press, 1991), 25-27.

[119] Ibid.

environment may have resulted in a clearer understanding of the problem and perhaps a better

employment of defensive measures that may have provided early warning and drastically reduced

the devastation of the attack.[120]

The second step of the ADM is framing the problem. A problem exists when one "notices a

difference between the current state and desired end state."[121] As discussed previously, Army

doctrine states that commanders decide when to employ the ADM based on the familiarity of the

problem.[122] When a mission is received the "end state may be unclear....[and] a sense of surprise,

uncertainty, or confusion triggers a need for a deeper understanding of the situation."[123] In short,

the design process is appropriate if the problem is unfamiliar. As discussed above, the familiarity of

the environment should also guide the decision, not only the problem.

Although not prescriptive, the ADM offers three activities that help to frame problems:

"review the environmental frame, identify problems and map out their relationships, [and] capture

the problem frame in text and graphics."[124] Developing a problem narrative that defines the

situation and supports the commander's dialogue with higher and adjacent commanders enhances

overall understanding of all participates and feeds into the development of an operational

approach.[125] By allowing this dialogue to flourish in the "adaptive space" between the creativity of

design and the reductionism of the MDMP, leaders and their organizations will experience new

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[120] Eliot A. Cohen and John Gooch, *Military Misfortunes: The Anatomy of Failure in War* (New York: The Free Press, 1991), 25-27.

[121] ATP 5-0.1, Army Design Methodology, 4-1.

[122] ADRP 5-0, *The Operations Process*, 2-13.

[123] ATP 5-0.1, *Army Design Methodology*, 2-1.

[124] Ibid., 4-1.

[125] Ibid., 4-4.

ideas and a shared comprehension of the problem.[126] The same tools and techniques used in framing an operational environment also apply to problem framing.

The third step in the ADM is framing solutions or developing an operational approach. The planning group arrives at shared understanding and agreement of the problem set prior to developing an operational approach. This operational approach is a broad description of what must get "done to solve or manage identified problems…[and serves as] the main idea that informs detailed planning."[127]

Army doctrine provides several activities to develop an operational approach: "determine enemy and friendly center of gravity, identify decisive points, determine a direct or indirect approach, establish objectives and devise lines of operations and lines of effort."[128] This emphasis on operational art to produce a broad approach illustrates the necessity for "good judgment—not [merely] problem solving."[129] With commander involvement, the design process can determine the "direction and destination" of the organization."[130] A design process via the ADM can have an incredibly significant impact on the future given an emphasis to reach understanding of an environment and problem prior to any decision for significant actions.

The Army planning doctrine is comprehensive and offers a great deal of useful structure for commanders and planners who seek desirable outcomes. However, using problem familiarity as the main criteria for implementing design in the operations process disregards many other situations where an organization can benefit from design. This ignores the inherent complexity of nearly

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[126] Michael J. Arena and Mary Uhl-Bien, "Complexity Leadership Theory: Shifting from Human Capital to Social Capital," *People + Strategy* 39 (Spring 2016), 24.

[127] ATP 5-0.1 *Army Design Methodology*, 5-1.

[128] Ibid., 5-2.

[129] Nelson and Stolterman, *The Design Way,* 5.

[130] Ibid.

every conceivable operational environment and units lose an opportunity to gain rich and collaborative understanding. Secretary Mattis' statement that planning is incomplete without design is a notion Army senior leaders should internalize and capture in Army doctrine. Absent this level of attention and emphasis, the ADM and design thinking will likely continue to exist on the fringes with operational units due to expertise and training shortcomings along with a lack of command emphasis.

Conclusion

But in this time of increasing instability, of increasing uncertainty throughout the globe, we must squarely face and solve significant challenges.

—General Mark Milley, Senate Confirmation Hearing to CSA

The secret of all victory lies in the organization of the non-obvious.

—Marcus Aurelius

Context is more important than material capabilities in asymmetric and hybrid conflict. The goal of a design approach is to connect strategy to tactical action by achieving a rich understanding of an enemy and environment through a synthesis process. This considers cultural objects such as stories, myths, language, artifacts, events or the theory of a phenomenon. When the focus shifts to meaning within an operational environment, one starts to understand what is real and what cannot be seen. What is seen is a manifestation of what is not seen.

Language is vital to the realization of meaning. Historian Lawrence Freedman suggested that "the language we use to identify our interests, give meaning to our power and explain our actions is infused with conventional wisdom and uncomfortable rationalizations, moral presumptions and embedded axioms."[131] Something meaningful is discovered if one understands the way in which people see themselves. Asymmetry, from an operational perspective, understands the enemy's mindset. One gains understanding through challenging assumptions about the adversary through holistic and human centered approaches in operational art that employ a design style of thinking.

The same tendency to use a template to think about and fight the next war results in a focus on what is seen and not its meaning. This leads to a focus on symptoms and not root causes of problems. Army doctrine provides best practices such as IPB, an analytical tool within the MDMP.

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[131] Lawrence Freedman, *Deterrence* (Malden, MA: Polity Press, 2006), 5.

However, there is no mechanism for understanding when one reaches the end of a best practice or when something different is required.

To overcome this shortcoming, organizational theorist Jamshid Gharajedaghi suggested, "design is a vehicle for enhancement of choice and holistic thinking" that goes beyond templates to find meaning and unique approaches.[132] He continued by submitting that "the ultimate aim of interactive design is to replace the existing 'shared image' responsible for regenerating a pattern of malfunctioning order with a shared image of a more desirable future."[133]

Nevertheless, Army organizations tend not to use design methods and not to think in terms of context because of the emphasis on achieving a desired end state. Military end states are generally measurable and quantifiable, unlike the qualitative nature of context that comprises an operational environment. This qualitative feature of context present challenges for the military practitioner with measuring results, especially absent a design methodology.

Despite these challenges, the policy maker and military planner's quest for meaning and understanding of an operational environment allows for more timely, informed, and appropriate decision making. Boyd pointed out "to comprehend and cope with our environment we develop mental patterns or concepts of meaning…we cannot avoid this kind of activity if we intend to survive on our own terms."[134] These secondary questions for context and meaning get closer to determining root causes of problems. This endeavor assists in unifying strategy and tactical action through the connective tissue of operational art. This way of thinking and doing is less likely to lead to strategic failure.

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[132] Jamshid Gharajedaghi, *Managing Chaos and Complexity: A Platform for Designing Business Architecture*, 2nd ed. (New York: Elsevier, 2006), xviii.

[133] Ibid., 125.

[134] John R. Boyd, "Destruction and Creation" (unpublished paper, September 3, 1976), 1, accessed March 13, 2017, http://goalsys.com/books/documents/destruction_and_creation.pdf.

This monograph attempted to propose a way of thinking and planning that goes beyond current Army doctrinal methodologies, and aimed at attaining greater relevance in operational art. One achieves this through critical and creative thinking inherent in a holistic and human centered approach and design methods. This is important given the changing character of warfare and modern day contingencies characterized by the confluence of near-peer adversaries, nation-states, insurgents, and terrorist organizations. This amalgamation of actors will likely employ a hybrid approach of conventional and nonconventional warfare including terrorism and guerilla tactics. These groups may use weapon technologies typically associated with state actors and do so in highly complex urban areas.

Milley stated, "Right now the level of uncertainty, the velocity of instability, and potential for significant inter-state conflict is higher than it is has been since the end of the Cold War in 1989-91."[135] Given this world context, clarity of thought is required to go beyond reductionist and analytical planning and thinking methods. Lieutenant General H.R. McMaster, the National Security Advisor, addressed this need for clarity of thought when considering the modern contingencies of warfare: "preparing effectively for war to prevent conflict, shape security environments and, if necessary, win in armed conflict requires clear thinking."[136]

Recommendations

To achieve what Milley and McMaster called for, this monograph offers two recommendations. The first is the full integration of the ADM and the MDMP. The intention of this step is to reverse the marginalization of design as well as the lack of expertise to operationalize

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[135] Sydney J. Freedberg Jr., "Gen. Milley to SASC: World Getting Worse, Army Getter Smaller," *Breaking Defense* (July 21, 2015), accessed January 8, 2017, http://breakingdefense.com/2015/07/gen-milley-to-senate-world-getting-worse-army-getting smaller/.

[136] H.R. McMaster, "Thinking Clearly about War and the Future of Warfare: The US Army Operating Concept," *Military Balance Blog*, October 23, 2014, accessed February 27, 2017, http://www.iiss.org/en/militarybalanceblog/blogsections/2014-3bea/october-831b/thinking-clearly-about-war-and-the-future-of-warfare-6183.

design methodologies across the Army, especially battalion through division levels. Secondly, the Army needs to rewrite the ADM doctrine to include a *self framing* step. This recommendation acknowledges that the most relevant actions may start with reordering or restructuring one's organization. With both recommendations, design serves to institutionalize critical and creative thinking to connect the why of strategy to the how of tactical action.

The first recommendation is full integration of the ADM and the MDMP. To bridge the dichotomy between the two planning methods, the Army should borrow from the Marine Corps Planning Process, MCWP 5-1, to reach a higher degree of integration in the conceptual and detailed planning. The ADM doctrine is a quality reference and many degrees more detailed than the Marine planning doctrine. However, Marine doctrine acknowledges the inseparability and synergistic relationship between design and detailed planning that Mattis pointed out. Marine doctrine nests design with detailed planning and specifies design before and during the operational process:

> Design is a way of organizing conceptual work within an organization to assist commanders in understanding, visualizing, and describing the operational environment and to develop approaches to solving problems. Because the environment is dynamic, problems also evolve. As a result, design must occur throughout planning, execution, and assessment.[137]

The second recommendation is to rewrite the ADM doctrine to include a self frame requirement. A self frame requirement is a forcing function for organizations to consider changes internally, if and when appropriate. The intention of this step is the acknowledgement that often the best way to obtain a desired future outcome in an asymmetric environment against highly adaptable adversaries is to redesign one's organization first. During the second Intifada in 2000 and the 2006 Lebanon war against Hezbollah, Hirsch redesigned his IDF units in an innovative manner to address his hybrid adversary.

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[137] Marine Corps Warfighting Publication 5-1, *Marine Corps Planning Process* (MCPP) (Washington DC: Department of the Navy, August 2010), 1-4.

He provided his thought process, which provides logic for adding self frame to the ADM:

> In order to adapt operational forces to a frenetic reality, a structural flexibility is needed. Assuming a country will not construct two separate armies, an army must possess the ability to build ad hoc forces, create unorthodox operational structures, and give them full support in training, logistics, weaponry, and legal cover, befitting the conditions and constraints of the operational arena.[138]

Adding this self frame step to the ADM will help the Army gain structural flexibility to meet the challenges of 21st century warfare. The recommended doctrinal update is as follows: framing operational environments, framing problems, *self framing*, and framing solutions. This simple addition acknowledges the importance of self design. Both recommendations begin to alter the Army's genetic code about thinking about problems, planning, and visualizing one's organization and the environment. This represents a holistic and human centered approach from a design process that institutionalizes critical and creative thinking and connecting strategy and tactics. This addresses Milley's requirement to conduct introspection to challenge assumptions and change the way the Army thinks, trains, and fights.

An area for further study is the relationship between design methodology and mission command. Fully integrating design into Army planning practices can have the added benefit of creating an environment of shared understanding and trust. This can lead to a greater tendency for commanders to use mission command within their organizations. Hirsch refers to these phenomena as "communal information" and an "organizational climate that encourages open discourse, free from the fear of hierarchy."[139] The thought process and mentality required to achieve this organizational climate can amplify a commander's and organization's inclination and expertise with mission command. A study of organizational design practices and mission command could further illuminate a synergetic relationship and consequentially enhance the argument for both.

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[138] Hirsch, *Defensive Shield*, 137.

[139] Ibid., 134.

Despite these recommendations for a human centered approach and design integration, it is the commander who "will decide where the 'discourse' of design framing 'as a journey' ends and…detailed planning begins."[140] Design is not a panacea for addressing asymmetric and hybrid adversaries, and it does not replace detailed planning.[141] The two processes must remain complementary and overlapping and when practiced in this manner, the probability of reaching relevant and productive desired outcomes will increase. Military theorist Richard Swain argued, "The practice of design, translating strategic guidance into tactical acts, is operational art for the 21st century."[142] Design is not a cure-all, but the ADM provides the commander and staff indispensible tools for understanding an environment and problem and connecting the logic of strategy to meaningful tactical action.

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[140] Michael Evans, "Centre of Gravity Analysis in Joint Military Planning and Design: Implications and Recommendations for the Australian Defense Force," *Security Challenges* 8 (Winter 2012): 102, accessed December 22, 2016, http://apo.org.au/node/31528.

[141] Ibid.

[142] Swain, "Commander's Business," 68.

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